



This imposing picture shows the operational facilities of the Port of New York Authority elevator at Brooklyn. Perhaps the only export terminal on this continent not located on a railroad, this large, fast and efficient plant has just recently added a \$350,000 gallery to increase its shipping facilities. The elevator is equipped for unloading barge grain bound for European relief and plays an important part in government grain shipping.

GRAIN

THE MAGAZINE OF PLANT MANAGEMENT AND OPERATION



There Have Been **CURVES** Since Way Back When

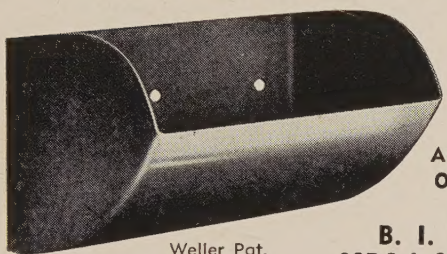
But **results** prove there's only **one** curve that will give an elevator bucket maximum efficiency and capacity . . . the **Logarithmic Curve** used in designing the

CALUMET Super Capacity Elevator CUP

Ask any elevator operator who has replaced old style buckets with the Calumet and he will tell you that he is getting **far** greater capacity than previously obtained.

So, remember: "**The Curve That Counts**" is the **Logarithmic Curve**. Remember, too, the Calumet Cup can be spaced closer on belt, operates ef-

ficiently over any sized pulley; no critical speed; no backlegging.



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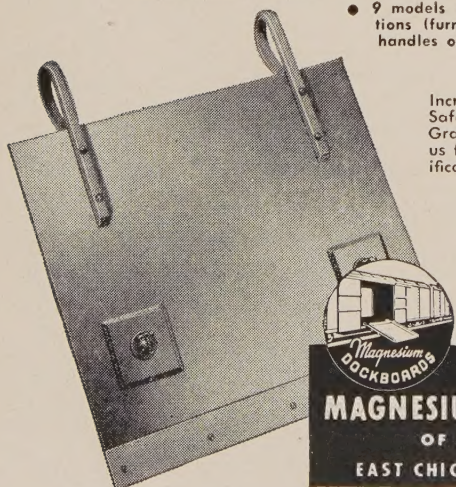
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- Balanced design for maneuverability
- Quickly reversible and replaceable striker plates assuring long service
- Non-sparking, eliminates explosion hazards
- 9 models to fit all conditions (furnished without handles or hooks)



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- WESTERN DIVISION: 831 S. Flower St., Los Angeles 14, Calif.

COLD WEATHER BRINGS ITS PECULIAR HEALTH — WILL YOU BE AMONG THOSE:

WHO Suffer colds and influenza and pneumonia because, through **loss of sleep and rest**, you lower your resistance to the germs causing these diseases? These germs are commonly passed from person to person in the cold weather when there is more crowding into indoor places and, therefore, more free exchange of harmful germs between people.

WHO Wear inadequate socks and footwear in cold weather and suffer from chilblains?, or **WHO** don't cover calves of their legs or ears in below zero weather and freeze the skin of these parts?

WHO Injure the frozen skin rubbing the frozen parts violently or applying heat to the frozen area? **Frostbite** should not be rubbed and should be allowed to warm slowly — never apply heat to the frozen part.

WHO Having heart disease, bring on a fatal attack when shoveling snow or pushing a stalled automobile?

WHO Suffer fractures and bruises from slipping on icy steps and sidewalks?

WHO Take a chance n freezing to death by drinking alcoholic beverages when out in the cold for a prolonged period? Under these conditions the body attempts to preserve its heat by shunting blood from the surface to the vital organs. Alcohol causes more blood to circulate in the skin with consequent loss of heat at a time when the preservation of body heat is vital.

In cold weather:

1. Get enough sleep.
2. Dress warmly and fully.
3. Don't rub or apply heat to frostbite.
4. Exercise with moderation.
5. Watch your step.
6. Don't use alcoholic drinks during prolonged exposure and cold.

Aetna Life Insurance Company

CORN AND WHEAT

The United States is the greatest producer of corn in the world, accounting for about 3/5 of the total raised annually. On the other hand, it is responsible for only about 1/6 of the total world wheat production. Corn, therefore, is actually a more important crop to the American farmer who should realize this year about 4½ billion dollars—directly or indirectly—from this one grain. The wheat crop is expected to bring the farmer only one-half as much income as corn.

For every 100 bushels of wheat used in this country during 1947, about 39 bushels were converted into food for human use. An equal amount was also shipped abroad, again mostly for human food. About 14 bushels were used to feed livestock to supplement corn feeding, 7 bushels were set aside as seed for planting the new crop, and less than 5/100 of 1 per cent were utilized as an ingredient in industry for such miscellaneous uses as alcohols and chemicals.

Grain

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Ever think of these as Farm Implements?

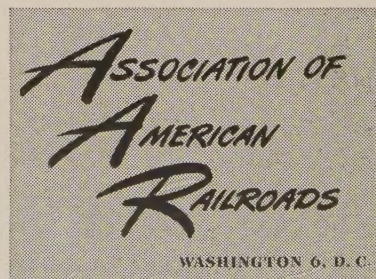
Modern farmers, with their efficient and highly specialized implements, harvest crops *fast*.

Consequently, railroads must be prepared to handle heavy movements from the time harvesting begins. This requires the skillful and efficient use of another kind of "farm implement" — railroad cars — upon which farmers and the nation depend to get crops to market.

To do this essential job, the railroads have been acquiring new rolling stock as fast as it could be manufactured. Since the end of the war they have built and bought nearly 200,000 new freight cars. And they have on order another 100,000 cars, or close to a full year's output for

the railroad car builders.

These cars are just a part of the vast railroad renewal program which includes progressive improvement also in motive power, roadbed and signals, materials and methods — to the end that the American railroads shall continue to provide the most economical, the most efficient, and the safest transportation in the world.



SOGES CHAPTER MEETING DATES

1st TUESDAY — Minnesota SOGES Chapter. Henry J. Anderson, Bunge Corp., Minneapolis, President; James Auld, Hales & Hunter Co., St. Louis Park, Secretary.

2nd TUESDAY — Omaha Council Bluffs SOGES Chapter. John T. Goetzing, Rosenbaum Bros., Omaha, President; W. S. Pool, Nebraska-Iowa Elevator, Omaha, Secretary.

2nd FRIDAY—Central States SOGES Chapter. M. M. Darling, Acme-Evans Co., Indianapolis, President; N. R. Adkins, Ralston Purina Co., Lafayette, Secretary.

3rd TUESDAY—Kansas City SOGES Chapter. Orin Kinman, Cargill, Inc., Kansas City, President; George D. Duncan, Standard Milling Co., Kansas City, Secretary.

3rd TUESDAY — Chicago SOGES Chapter. Edward Anderson, Norris Grain Co., Chicago, President; Harry Hanson, Glidden Co., Chicago, Secretary.

STATIC ELECTRICITY IN THE GRAIN AND MILLING INDUSTRY

W. J. FAIRBAIRN

Static electricity is more and more of interest to the public because of recognition as a source of fire and explosion hazards and the need for developing precautionary measures. This need is sometimes hampered by the difficulty of understanding the nature of the problem and the fundamental elements that govern the production and control of static electricity.

This interest extends to elevator and milling properties. Serious trouble is experienced from static charges in driving belts on machinery also in conveyor belts and mills. Investigations have shown that higher static potentials exist in all parts of elevator equipment when handling smutty grain than when handling clean grain. Grain, when passing over metal surfaces, produces electrification in which cases the metal is positively charged and the grain passing over it is negatively charged. Explosions in grain elevators, attrition mills, threshing machines have been caused by static charges building up in various parts of the equipment and discharging to ground or from one part of the equipment to another.

Effectively grounding all metal parts of the machinery has been found to be the best way of eliminating static hazards. It is not enough to ground the stationary parts of the equipment but the moving parts must also be grounded, the latter by a brush rubbing on the shaft. Machinery driven by belts may produce a static potential, built up by the belt unless properly grounded.

Theory Of Generation Of Static Electricity

Electric charges always occur in pairs of opposite kinds, namely positive and negative, and are brought

THE EVERPRESENT DANGER OF SERIOUS TROUBLE DUE TO STATIC ELECTRICITY IS OF PRIME INTEREST TO THE ELEVATOR SUPERINTENDENT. MR. FAIRBAIRN PRESENTS AN EXPERIENCED AND EXPERT "BLACK ON WHITE" TREATMENT OF THIS PROBLEM AND THE STEPS TO FOLLOW IN THE REMOVAL OF THE STATIC HAZARD

into being when two electrically dissimilar substances are placed in contact. Then the negative charge will migrate to one substance and the equal opposite charge to the other contacting substance in equal amounts. These charges will remain on their respective substances. Such charges as develop in the substances in contact are different depending upon the nature of the substance, the extent of the area in actual contact, and temperatures, the cleanliness of the contacting surfaces and the pressure exerted upon them. When contacting dissimilar substances are separated, the process of separation generates static electricity. A charge of appreciable volume can be produced by such separation but can only be measured if one of the substances is practically a nonconductor. The nature of the contact between two component systems in most industrial operations is influenced by physical pressure either with or without friction equipment. This pressure may be light as when paper travels over idler rolls or the passage of ground materials or grains through conveyors, tubes or chutes, or pressure may be great as between grinding rolls or we may have the light contacts of finely dispersed powder such as sulphur, flour, bran or other substances often airborne. Voltage increases at an enormous rate in direct proportion to the distance of separation. When the separation

distance becomes appreciable, the increase of voltage grows less and less until finally further separation produces no additional increase in potential. Observe that even when pressed closely together, two substances are still no nearer to each other than the thickness of one atom. It is at the inconceivably narrow separation between two contiguous surfaces that the electrons are caused to pass from the surface atoms of one material to those of another so that the one surface becomes positively and the other negatively charged. This is the contact potential theory. The potential difference of the charge per unit of contact area of any two substances is in direct proportion to the difference between their dielectric constants. The process of rubbing substances together causes many more parts to form momentary contacts than would be caused by still pressure alone, thus more electrons may pass from one substance to another and by this means augment the charge in each. This process of electrification by rubbing one substance against the other is at times called "frictional electricity." Actually the basic process of generation here is still the application of contact and the difference of potential generated by separation.

Theory Of Bonding And Grounding

Electrification produced on a vulcanite (hard rubber) rod by rubbing it with fur may remain for

hours when the air is dry even though one end is held in the hand or connected by a wire to the ground. If the vulcanized rod were a perfect insulator, the electric charges could remain impounded on its surface indefinitely. Because, however, no substance is a perfect insulator, the electric charges at one area gradually diffuse over the entire surface of the substance. It is found that under certain conditions it will effectively discharge electrified conductors at once but charged insulators are not effected by grounding except under long periods of time.

Humidification

If the ambient air is dry, electric charges generated on a hard rubber (vulcanized) rod would remain where produced for hours even if the other end of the rod is grounded. If the relative humidity of the ambient air is high, the electric charges will not drain off directly into the humid air, for moisture in the air in the form of vapor is much too thin and tenuous to provide a path directly to ground for the dissipation of an electric charge. Water vapor in the atmosphere has been proven to be practically a perfect insulator. Humidity formed by fine spray as from spray type humidifiers or steam jets can lead to electrification under some circumstances rather than to the release of electrification.

Treatment

The generation of static cannot be prevented nor is it practicable to attempt prevention. Generation is not in itself a hazard. The hazard only appears when static accumulates to the extent that a spark discharge may occur. Where such a spark occurs in accumulations of flammable materials a fire or explosion may result. The removal of the static hazard, therefore, called for the prevention of its accumulation rather than its generation. Humidification, grounding and neutralization will prevent accumulation but does not affect or prevent generation.

Transmission Machinery

Static electrical charges are gen-

erated on power transmission belts in four ways:

1. Friction of the belt on the pulley.
2. Separation of the belts from the pulley.
3. Flexing of the belt.
4. To a less extent by the friction of the atmosphere on the belt.

On conveyor belts the charges are generated in addition by the friction of the conveyed material. If the machine is electrically grounded, a charge will remain only on the belt. If the machine is insulated from the ground, its potential will gradually build up as additional charges are generated on the pulley. The rate that the potential builds up on the machine depends upon such factors as the electrical capacity of the machine and the atmospheric conditions surrounding it. V-belts are less liable to produce static than flat belts but should be similarly protected. Static may also be manifested in connection with power transmission, belts and pulleys which may produce, in some cases, very long sparks.

Aspirators

In the centrifugal type metallic parts including the cone, fan and rotor shafts, hopper, fan housing and conveyors should be electrically connected and grounded. In the gooseneck type of aspirators, conveyors, fan shafts and metal linings should be electrically connected and grounded.

Bins

Metal flour bins, feed bins, tempering bins or grain bins and metal thimbles or manholes in the roof slab of concrete bins and metal gates or spouts at the bottom of such bins should be grounded. In wooden bins, all metal in the form lining, tie rods, ladders, gates or spouts or in any other form should be grounded.

Blower Systems

Fires in blower systems have been studied in regard to whether charges of static of a magnitude capable of causing ignition may be generated in blower systems under operating conditions by the Under-

writers Laboratory. Sheet-metal, asbestos-cement and wooden ducts of various sizes and lengths, some lined and some unlined, were employed in these tests. From these tests it appears that air practically free from solid or liquid particles is not perceptibly electrified under conditions ordinarily obtaining in blower systems. If dust or lint is present in appreciable amounts, static charges of a magnitude capable of causing ignition by spark discharges may be generated. Voltages actually observed have ranged from 100 to over 10,000. It is to be noted that even when the metal ducts are electrically bonded and grounded, the dust discharged into the air carries a static charge from which it appears that outlets of blower systems for removal of dust, lint and vapor (containing solid or liquid particles) should be located away from combustible material.

Bran Dusters

Usually the grounding of the frame of metal bran and shorts dusters will provide effective protection against static. In other types of machine, the metal heads of the dusting case are usually connected to the main brush shaft through the driving gears on the bearing supports. The dusting screen sections should be bonded to the metal head of the dusting case, and metal portions of the outside case should be bonded to the machine frame and the brush shaft bearings and the whole system grounded.

Cleaners

Grain cleaners of the all metal type usually require nothing more than the grounding of the frame to provide reasonable protection against static, but the machine should be checked to make certain that there is continuous metallic connection between the metal covering of the frame and the screens, eccentric shaft, fan shaft or other parts. In the case of wooden cleaners, all of the metal parts which are exposed to contact with belts, stock or dust laden air should be bonded and grounded. Bonds may be satisfactorily applied to shafts simply by making a connection to one bear-

ing on each shaft. Fan casings and other fixed sheet metal parts should have their bonds securely attached by means of screws or bolts. Bonds for the screens and other movable parts should be connected together and bonded to the stationary parts through eccentric connecting rods or metal sieve supports. Where metal scrapers are used, they often provide a convenient means for making a bonding connection to the screens. Cylinder cleaners of the wood frame type may be satisfactorily protected by bonding to-

gether all cylinder shafts and other metal parts, and grounding the system.

Conveyors

All parts of pneumatic conveying systems are usually of metal construction and may be readily grounded. Screw conveyors of the all metal box type may be readily grounded. The wooden box type, for this type, both the metal lining and the worms should be grounded. The head and the tail pulleys of belt conveyors, together with the

idler pulleys, frames, and loading and discharge spouts should be grounded.

Driers

All metal parts of the dryer should be electrically connected and thoroughly grounded.

Dust Collectors

All metal parts of dust collectors together with the air ducts, conveyors and shafts should be electrically connected and grounded. Explosions and fires attributed to static electricity in bag type collectors have been eliminated in some plants by sewing braided copper wires the lengthwise seams of the bags and grounding the wires to the shell of the collector.

Elevator Legs

In metal elevator legs, head, boot, leg casings, head and boot pulleys and elevator cups should be grounded. All except the head pulley of the buckets may be grounded by attaching the ground wire to any portion of the exposed metal. Head pulleys may not have direct metallic contact with the metal head, and the head shaft, should, therefore, be separately grounded.

In wood legs, it is important that the head and boot pulleys and the buckets be grounded, and where metal heads or boots are used in connection with wood or concrete legs, such metal parts should be grounded also. Elevator legs present some of the most difficult problems of grounding, found in a grain handling plant, and probably involve some of the greatest static hazards. Grain discharged into the boot may be highly charged from friction on belt conveyors or in spouting, and this charge may be accumulated on the metal buckets as the is scooped up. The buckets are insulated by the cup belt, and may carry their charges all the way up to the head pulley. If the head pulley is lagged, the charge on the buckets may be increased by belt friction, and carried down the back leg until the buckets come within flashing distance of the metal boot pulley. Anywhere in the course of

NEED BELTING?

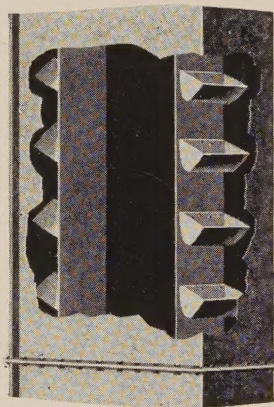
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travel of the buckets in the legs, there is a possibility of sufficient belt slap to bring the buckets within flashing distance of the leg casing. The normally dusty atmosphere inside of the leg makes the occurrence of such sparks or flashes extremely dangerous and it is probable that a surprising number of frequent leg explosions have their origin in static sparks. The first step in the protection of a leg is effective grounding. All metal legs in concrete houses should be grounded. All spouting, shafting or other metallic material in the vicinity of the legs should be bonded to the leg. The problem of grounding the buckets inside of the leg is most difficult to solve. In some cases boots are fed from the back or at a point near the bottom of the front side in such a manner that the buckets are entirely clear of the grain before the contact between the bucket bolts and the metal boot pulley is broken. In such cases, it is probable that any static accumulation on the buckets will be drained to the boot pulley. Where buckets do not emerge from the grain before contact between bolts and boot pulley is broken, there is danger of static on the buckets, and the problem is one of grounding the buckets continuously until they have emerged from the grain. In this connection, there is a possibility of aggravating the hazard by the attempt to eliminate it. As an illustration, a metallic roller or brush arranged to make contact with the buckets after they had left the face of the boot pulley might cause a static spark or flash at the approach of each bucket, and such sparks at a point where dust is normally in suspension would be highly dangerous. Any arrangement for grounding the buckets must make contact with the buckets before they leave the face of the boot pulley, and must maintain continuous contact until the buckets are entirely clear of the grain. A similar arrangement is also necessary at the head pulley. It has been suggested that the hazard of static accumulation on ele-

vator buckets can be eliminated by bonding all of the buckets together, and making certain that the bucket pulley is grounded. Light flexible woven copper ribbon may be used for bonding, and may be installed simply by loosening the bucket bolts, stretching the ribbon along the belt under each bucket and then tightening the bucket bolts again. Care should be taken to make sure that all of the buckets make contact with the ribbon, and that the ribbon is continuous throughout the length of the belt. Continuous

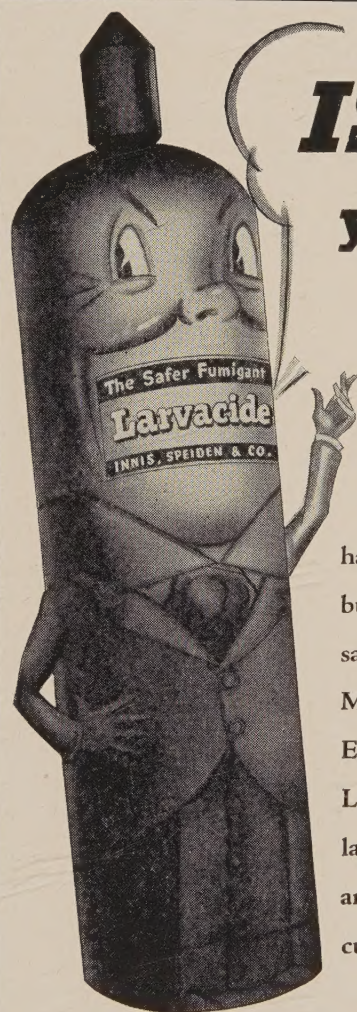
grounding of all of the buckets is thus maintained through contact between successive bucket bolts and the boot pulley.

Fans

All metal fans require no protective treatment except grounding. Wood case fans should have any metal parts bonded to the shaft and grounded.

Grain Cleaners

All metal grain cleaners should be grounded by attaching the ground wire to the frame of the



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cleaner. In cleaners having wooden housings, all metal parts including screens, conveyors, fan, feeder, and shafts should be electrically connected and grounded.

Grinders

Attrition and hammer mills often discharge ground stock in a highly charged condition. The mills themselves should be grounded and bonds should be extended to any conveying elevator or blowing equipment used in connection with them. The metal lining of wood stock bins, wood spouts, and the worms of sacking conveyors should also receive special attention. Metal stock collectors and the wind trunking used in connection with them should be grounded.

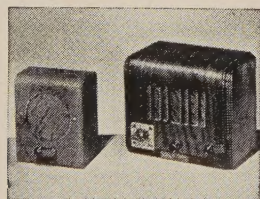
Midlings Mills

These units are usually of all metal construction and require no protection except the grounding of the frame.

Mixers

There are many types of mixers and they may be readily grounded.

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726 Converse Building Chicago 6, Ill.

Where wood is used all metal parts should be electrically connected and grounded.

Packers

Most packers can be grounded by attaching the ground wire to a bearing.

Purifiers

All metallic parts of the purifiers including the fan and eccentric shafts, fan housing and conveyors should be electrically grounded.

Reels, Revolving Screens and Bolters

There have been a number of explosions in reels attributed to static. All metal parts of the reel, including the metal screens, shaft, spider and conveyors should be electrically connected and the whole system grounded.

Scales

All metal automatic scales can be grounded through the frame. Hopper scales with metal hoppers may usually be grounded through the metal frame. In the case of a wooden hopper, all metal parts should be electrically connected in the system grounded.

Scourers and Polishers

Wood frame type machines require that the main and eccentric shafts, metallic parts of the housing, fan casing, wind trunks, and shoes should be electrically connected and grounded. All metal machines can be readily grounded through the frame. If there should be no metallic connection between the screen in the shoe and the metal frame, they should be electrically connected.

Sifters

The metal frame of a sifter, and any metal portions of the casing, interior metal spouts or metal screens should be bonded and grounded. Bond wires or strips may be tacked inside of the box to make contact with the interior metal parts, and then be connected to one of the bolts by which the metal frame is attached to the box. The metal frame may be grounded through the base plate or the upper bearing flange whichever is more convenient.

Spouts

Metal spouting is usually connected to metal elevator legs or metal conveyors in such a manner that the various sections of spouts are bonded and grounded. Where there are joints of wood or other insulating material in metal spouting, suitable bonds should be placed around such joints.

Wood spouting is usually lined with metal and this lining broken at joints or angles in the spouts or at connections to machinery. Such isolated sections of metal lining may accumulate dangerous static charges and it is very important that they be bonded and grounded. When new spouting is being installed, and often in old spouting, the sections of lining may be connected together with metal strips. Where this cannot be done conveniently, nails to which bond wires are attached may be driven through spout and lining and tightly clinched against the lining on the inside. At least two nails should be used for each such bonding connection, and the bond wire should be wrapped around each nail at least twice before the nail is driven down tight. In some cases, it will be found possible to stretch a copper wire through the inside of the spout in such a manner that contact is made with each section of lining. But this method is not recommended for general use because of the difficulty of maintaining permanent connection.

The Bureau of Mines at Pittsburgh have conducted tests on the explosives of dust in air dispersion. The author of the description is Dr. Hartman and these findings may be obtained in Bureau of Mines, publication 3751-3924-3722. Corn starch dust can be ignited by 40 millijoules. This is not a heavy charge since static charges on the human body may equal 10 millijoules, and the charge as produced on belts and other moving machinery such as reels, etc., is very much higher. For a few quotations on other dusts studied:

Zirconium	15 Millijoules
Sulphur	15 Millijoules
Magnesium	80 Millijoules

One joule (1 watt second) equals 10,000,000 ergs, equals 0.7376 of a foot pound, equals .0009480 Btu.

Quantity of heat required to raise the temperature of one pound of pure water from 62° to 63° F.

(Before SOGES 19th Annual Meeting, Indianapolis).

"DO YOU KNOW HOW TO LIFT PROPERLY?"

If you have to lift objects, even fairly light ones, do it right. It takes no more time, it is easier and it may keep you from being laid up for several days.

In "solo" lifting, face the object with feet far enough apart (the length of the shoe is a good guide) to give a good base of operation without placing undue strain on the abdominal muscles. Adopt a stance which is comfortable and which will permit you to lift the job as nearly straight up as possible. Get down to the job by bending your knees, keeping your back erect. Raise the weight gradually (a sudden effort invites strain) by straightening your legs, taking the brunt of the strain upon your leg and shoulder muscles.

In "team" lifting, coordinate your efforts with the others, with directions being given by one, and only one, member of the team.

If you have to carry objects, do it safely. This requires:

1. That the load be close to the body and as near the worker's center of balance as possible to prevent: (a) too-heavy strain in one portion of the body and (b) throwing the worker off balance.

2. That the worker have unblocked vision ahead.

3. That the load interfere as little as possible with his normal walking gait.

JOBS AND SKILLS

The individual worker cannot be held solely responsible for keeping himself employed at all times under modern economic conditions. But if he does want employment he has the responsibility of making the most effective use of the opportunities available.

For a job-holder this means giving a good day's work for a good day's pay, and a steady effort to improve his competence. For a job-seeker, it means taking advantage of all facilities for general education and for the development of salable skills as well as seeking opportunities to use them.

ABSENTEEISM LESS AFTER 40

A survey of 17,800 workers in 109 plants by the *Monthly Labor Review*, reveals workers past 40 years of age show less absenteeism and have fewer accidents than younger workers. The highest absentee rate is for workers under 20. Older workers also lay off far less for minor accidents. This is partly because their lives are usually more settled, which gives them greater peace of mind.

IT'S A FACT

American workers paid 16,000 lives and suffered 2,000,000 injuries in addition to \$1,500,000,000 in lost wages for industrial accidents last year.

PUBLIC PAYROLL

Government payrolls — Federal, State and Local — were 12% higher last July than in July of 1947, according to the U. S. Census Bureau.

The bureau said 5,300,000 public employees received \$1,125,000,000 last July — an average of \$212. This compared with a \$196 average a year earlier. Federal employees in July numbered 2,107,244 with a payroll of \$494,289,496 for the month.

GRAIN HEDGING BOOKLET

The Chicago Board of Trade has printed and made available for distribution a new booklet "Hedging — An Insurance Medium in Marketing Agricultural Products." The book was prepared under the direction of the public relations committee in response to the many requests from business leaders, educators and others, for an explanation of hedging and its importance to the economy of grain marketing.

U. S. SOIL CONSERVATION BETTERS SOVIET PLAN

The United States is far ahead of the Soviet Union in both soil conservation and reclamation, according to U. S. officials and civilian experts who studied Russia's recent new program for "a strategic offensive" against drought.

Russian Communists, in announcing their program said sound agricultural planning is "not possible in a capitalist nation." Replying American experts said the United States had done more toward conservation in the past 15 years than Russia's program provides for in the next 15-year period.

The Russians in particular seek to protect the vast wheat belt of southern and central Russia from periodic drought winds. This program is similar to U. S. dustbowl projects.

H. H. Bennett, chief of the Federal Soil Conservation Service, declared that for 15 years the United States has had no peer in conservation.



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MINNEAPOLIS NOTES

Foremans' Night was celebrated at the November 9th meeting of the Minneapolis SOGES Chapter with more than a hundred supers, foremen and associates in attendance. Primary attention was given to a discussion of the paper grain door problem which was under the guiding hand of Robert Bredt who functioned as moderator.

To properly cover all angles of this controversial subject the following men were present to actively participate: W. R. Harvey, Assn of American Railroads; E. J. Larson, WWIB, Chicago; G. T. Murphy, Signode Co., Chicago; John Dwyer, State Grain Inspector; and E. H. Suess, WWIB, Minneapolis.

NOTE (From your editor's standpoint, paper grain doors pose a pro and con subject, one of great interest to grain men. We can vividly picture the interest that must have developed at the Minneapolis meeting.)

The above guests of the chapter were present to answer the verbal barrage directed to them. The majority of the complaints named slowness of coopering; danger to shovelers from severed steel straps; difficulty of removing the bottom strip of the door to permit shovel rigs to function efficiently; and door bulging after loading.

S.O.G.E.S. REPORTS

Mr. Larson stated that from definite timing tests which the WWIB had made, it was determined that the paper doors took only two or three minutes longer to cooper than the wooden doors. There was strenuous objection to this statement by all of the Superintendents present. The danger to the shovelers was answered by both Mr. Murphy and Mr. Larson as being just another hazard of the work to which the men must adjust themselves. There was no answer given to the problem of removing the bottom strip. It was suggested by one of the Supers that perhaps a wooden grain door at the bottom with the paper door overlapping would relieve this condition.

Mr. C. A. McIvor of the ADM objected to the Railroads failure to co-operate with the Minneapolis Terminals. He pointed out that during the recent "rush period" when the AAR was urging 24 hour a day and seven day a week operation to take care of tremendous grain receipts all of the terminal houses were seriously handicapped

by the new paper grain door. Mr. McIvor gave a specific instance of one 8 hour day at an ADM plant where only 17 cars were loaded against an average daily output of 40 cars. Loading was not started until 10:30 AM, giving the car cooper three hours start on the loaders. Still the coopers were not able to keep up with the loading crew. Specific instances were also given of cars that were loaded and returned to the plant for rehandling on account of bulging doors. Mr. McIvor contended that the railroads should have given more thought and instruction to preparing the grain trade for this innovation. They could have thereby eliminated much of the trouble and inconvenience which is now falling on the shoulders of the elevator Superintendents.

In response Mr. Murphy stated that of some 200,000 grain cars which had been coopered with paper doors since their introduction to the trade, the losses on these cars had been minor compared to the losses suffered on cars coopered with wooden doors. Mr. Larson also listed several lots of grain which had been traced thru from point of origin to destination with only minor losses.

In response to a direct question as to whether or not the paper grain doors were definitely here to stay or if they were still on an experimental basis, Mr. Larson replied that the final determination as to their use would lie with the individual railroads. Mr. Larson further stated that it was certainly the railroads desire to co-operate to every extent possible with the terminal elevators and shippers. Mr. Harvey pointed out that the loss to the railroads annually on wooden doors is tremendous due to the shipment of so many doors to various parts of the country where they cannot be reclaimed.

In closing the meeting, Mr. Larson assured the members of the Minneapolis Chapter that every effort would be made to solve their difficulties with paper doors. Working in close conjunction with the

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Minneapolis Office of the WWIB, he saw no reason why these problems could not be solved.

GIBSON CITY TOUR

The tour of the Central Soya Company plant at Gibson City, Ill., which opened the meeting sessions of the Chicago Chapter, gave the visitors an intimate view of the plant and its operations. The modern plant can be seen from some distance away and its 39 large cement grain bins are a landmark. Equipment in the plant is all of modern design and produce 38 different formula feeds of Master Mix concentrates and straights. Total storage capacity is 3,000,000 bushels and four elevator legs handle the grain. Two legs are rated at 12,000 bushel per hour and two at 8,000 bushel per hour.

Thomas Allwein is plant manager and Howard Habbeggar is elevator superintendent with Fred Jesse as Assistant Super.

HIRAM WALKER TOUR

The second tour of the Chicago Chapter on October 22 was made through the Hiram Walker plant at Peoria, Ill. Main interest was centered on the modern grain elevator where all types of grains can be handled separately or in premixed proportions. Three elevator legs handle approximately 35,000 bushels per 24 hours. Sixteen carloads (25,000 bushels) of grain are used daily at this plant and production figures daily include 140,000 gallons of 100-proof whiskey, gin and spirits as well as the important by-products of distillers dried grains and solubles. Other products are carbon dioxide for dry ice and fusel oil used in cosmetics. Grain storage capacity is rated at approximately 1½ million bushels.

BUFFALO NOTES

Believed to be the largest cargo of grain delivered in Buffalo this year, the 580-foot steamer Merton E. Farr unloaded 588,669 bushels with nearly 80% being oats and about 20% wheat. The grain was consigned to Cargill, Inc., and was

sent to the Superior and Electric elevators.

Grain-carrying activity on the Barge Canal has picked up markedly this season.

Authorization has been given Local 1286, Grain Elevator Employees, AFL, to negotiate for union shops at five Buffalo elevators. Permission has been granted for the local to act as bargaining agent by the National Labor Relations Board.

Waterfront elevators are filled to capacity as the Great Lakes navigation season closes. Conservative estimates place the size of the winter fleet at 40 vessels that will store grain in their holds. It is agreed that the fleet will be the largest in recent years.

Damage estimated at \$100,000 from fire was sustained by the Rex Grain & Milling Co., Inc., recently. Grain and large stocks of finished feeds were damaged by water.

Samuel L. Hassell, formerly operating a grain brokerage business under his name has sold the business to the Illinois Grain Terminal Corp., and will join the company as manager with headquarters in Chicago. Before establishing his own company, Hassell was local manager for the Checkerboard elevator.

BUFFALO CHAPTER PLANS LADIES' NIGHT

Secretary James Burns of the SOGES Buffalo Chapter reports that a committee is now working out the details for a Ladies' Night program to be held in the near future. Jim also reports that the members will really get going as soon as the boats stop running in the grain.

THANK YOU

That was a nice picture appearing on the cover of the last issue of "GRAIN". We appreciate having our Indianapolis plant given this publicity and thank you very much. It made an attractive cover. You are getting out a nice magazine and we enjoy reading it. A. C. Watkins, president, Cleveland Grain Co., Cleveland, Ohio.



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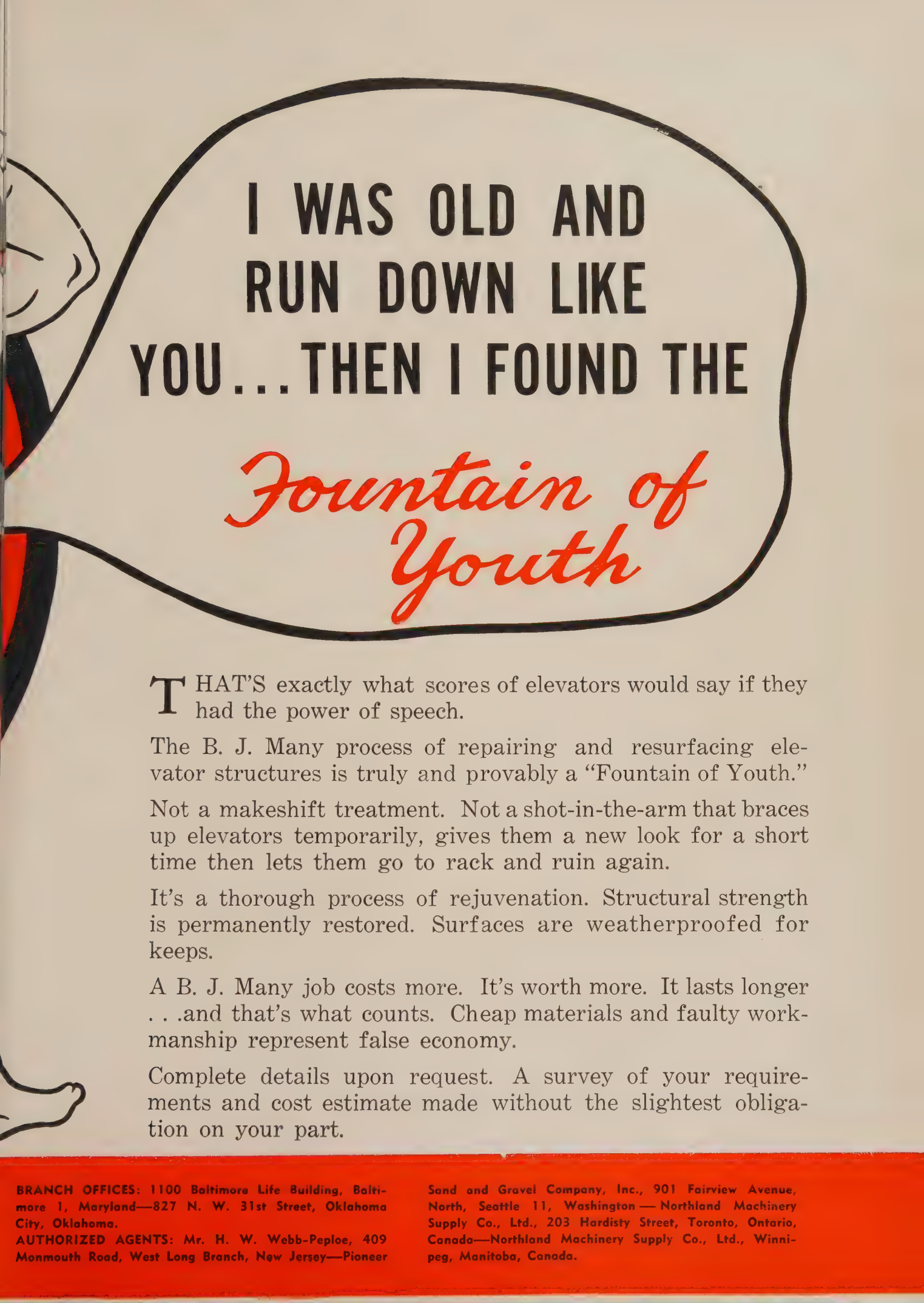
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ELECTRICAL HAZARDS OF THE PLANT ELECTRICIAN

HIS WORK CONCERNS THE SAFETY OF ALL

Every manufacturing plant requires more or less continuing electrician service in the maintenance and repair of existing equipment, in installing new equipment, and in making the modifications and rearrangements involved in the ordinary course of plant enlargements, process changes, and the like. As a rule, all of this work is handled by one or more full-time plant electricians. This discussion has to do primarily with the electrical hazards connected with the work of these men.

The hazards, other than electrical, are considerable. They have to do mostly with the use of ladders and scaffolds; with the handling, lifting, moving, and placing of motors and other electrical equipment; with the use of the hand tools involved; and from such factors as bad housekeeping, bad arrangement, lack of adequate planning, flying particles, and the like. The hazard is often not limited to those doing the work, but also may extend in substantial measure to other workers. Therefore, planning for the safety of all concerned from the start of each operation until its completion should be a fundamental part of these activities.

Repairing

In repair work on electrical circuits, there is always the hazard of electrocution, or from traumatic injury due to being caught by machinery unexpectedly started. Very positive measures are necessary to prevent the unexpected energizing of the circuit. The best method is to arrange control switches so that they may be locked in the open position with the key in the possession of the person doing the work so that only he, or a person specif-

ically designated by him, can remove the lock and close the switch. In case two or more persons may be exposed, the group leader should be given the responsibility of affixing the lock and removing it only when it is fully safe to do so. In many places a tag is placed on the open switch to show that men are at work on the equipment, but this is not as reliable as the use of locks, and is not recommended as a substitute. An even less reliable device is to block the switch open with a piece of wood. Even stationing a person at the switch with instructions to close it on signal is not always reliable because such signals can be misinterpreted and also, unless the person in charge is very careful to impress upon all concerned the importance of great care in such operations, unexpected slips are likely to occur with fatal results.

Job Planning

The planning for a given job will include, of course, decision as to what, if any, protective equipment is needed such as rubber gloves, insulating mats and the like, goggles or masks to give protection against flying objects or flashes, screens to protect others against flash from arc welding, or from flying particles if chipping or drilling is involved, properly safeguarded extension lights, etc. All of this material should be assembled at the start of each job and checked to make sure that it is in proper condition and available as needed.

The maintenance of electrical equipment in operating condition involves a considerable amount of routine testing and inspection. Effectiveness of the grounding of

such equipment should be checked on a regular schedule depending upon conditions and the type of equipment involved. Control devices such as circuit break switches and the like require frequent inspections. Grounds — particularly those inside — should be checked for evidences of mechanical injury or corrosion. Earthed or driven grounds outside may lose their effectiveness in spells of dry weather, hence they should be checked at such times. The hazard factor is always present in all work of this sort because there is always the danger of contact with uninsulated current-carrying parts and there is always the possibility of a part presumably grounded losing its ground and becoming live through an insulation failure. Safety in this work lies in the careful working out of safety procedures for all conditions involved and the faithful adherence to these procedures.

Adequate Circuits

One troublesome hazard which usually is more of a fire than an accident hazard, results from the overfusing of circuits by unauthorized persons. If, due to overloading, fuses "blow" or circuit breakers operate frequently, the process workers are likely, if they can get access to them, to bridge them by various means. This causes overheating burnouts, fires, and the failure of insulation. The remedy, of course, is to provide circuits of capacity adequate to the maximum loads that will normally be placed upon them and in addition, it is frequently advisable to provide locked fuse boxes to prevent tampering by unauthorized persons.

In general, the attitude that should be followed in guiding all inspection work of this nature is

to view it as preventive inspection. Inspection at its best keeps such close account of conditions as to permit the provision of additional or higher-capacity equipment or the taking of other suitable preventive measures before trouble develops. Not only does this policy mean fewer interruptions to service, but it is also an important factor in preventing accidents.

Hand Tools

Particular attention should be paid to the hand tools used on electrical work. So far as possible, handles of such tools should be of insulated material, or protected by effective insulation. For example, many electricians bind the handles of their pliers with tape. This insulates and provides a better grip, and if properly maintained, is satisfactory for most conditions. It is not an adequate substitute for rubber gloves in work on live circuits, but when contact is unexpectedly made with ordinary voltages, such insulation is very likely to mean the difference between a serious injury and no injury.

Safety Practices

Electricians are skilled workers and like most skilled workers have learned their trade through formal apprenticeship courses or by being assigned as helpers to qualified electricians. However, formal training in safety has not yet become general or thorough enough so that we can reasonably assume that electricians as a class need no further training in safe procedures. They frequently have unsafe habits of work without realizing it. Many of them take chances knowingly in the belief that they can get "away with it." However, the accident record of this type of work does not justify any such attitude on the part of any electrician. Therefore, the responsible head of every plant employing electricians should see that careful attention is paid to their work practices and whatever training and instruction they may need for safety, should be given. The injury rate for plant electricians as a class is high. In plants

where thorough attention is given to safety their injury rate is low. It could be low in all cases.

Precautions

1. Safeguarding electrical hazards is not particularly difficult. Yet workers are being injured and in some cases killed because they do not understand the hazards connected with all plant electrical circuits. They do not know what to do in an emergency, and they may do the wrong thing.

2. Here are a few of the precautions to be observed in working with electrical circuits:

a. On a circuit carrying a heavy load, always reduce the load by opening the oil or other control switches before opening the main knife switch. This reduces the danger of injury to the worker or damage to the switch from the flash as the switch is opened.

b. Use an approved type of insulated circuit tester of suitable voltage rating, or voltmeter, when checking circuits to see if they are energized.

c. When removing or replacing fuses, use an approved non-conducting type of fuse puller, in order to avoid injury to the hands. Al-

ways open the switchhead of the fuse panel to avoid danger of shock.

d. Before working on a line, lock the control switch open. If that is not possible put a prominent tag on it; and, as an added precaution, remove the fuses. If more than one person is working on the line, each one should have his tag or lock on the switch.

e. Make sure that rubber gloves and all other electrical safety equipment are in first class condition. Test them periodically or before using them.

f. Be sure to use the correct type of fire extinguisher on electrical fires . . . Dry Chemical — Carbon Dioxide — Vaporizing Liquids. Where the latter is used in an enclosed space, toxic fumes create an additional hazard.

g. Avoid the possibility of coming in contact with ANY electrical circuit, particularly if the body is grounded by standing on a metal or wet wood floor, or moist earth, or by touching a water pipe or other conductor. Under these conditions, even a low voltage circuit can kill.

—Division of Labor Standards
U. S. Department of Labor

INTERESTING FACTS ABOUT THE AMERICAN RAILROADS

The average load of freight per train was the highest on record in the first six months of 1948, amounting to 1,153 tons, compared with only 804 tons twenty years ago.

Each serviceable freight car in 1947 performed each day, on the average, a service equivalent to carrying 1,057 tons of freight for a distance of one mile, compared with 582 tons in 1929.

Railroads operating in Colorado reach higher altitudes than in any other State, the highest for any standard gauge railroad being on the Colorado & Southern Railway at Climax, where the elevation is 11,319 feet above sea level.

Freight trains in the first half

of 1948 moved 18,212 tons of freight one mile for each hour of train operation, the highest on record, contrasted with 10,580 tons in 1929, and 7,303 in 1920.

Railroads of the United States operate 695 passenger trains bearing names, of which number 125 are streamlined.

The railroads "navy" comprises nearly 2,000 units, consisting of car ferries, tug boats, car floats, barges and lighters, and other marine equipment, largely used in harbor and ferry operations.

Class I railroads on December 31, 1947, had an investment of \$127,311 in road and equipment per mile of railway line, compared with \$108,386 in 1929.

PERSONNEL IS PERSONAL

If I were given the responsibility of the selection of supervisors, human engineering would play an important role in the preliminary training of these men prior to selection. I would select men after thoroughly rating them to make sure that their qualifications include more than the ability to work hard. Among the many phases of the pre-foreman training program would be the subject of "Human Engineering", which would be a very important phase in the final selection of candidates for foremanship. If the candidates did not qualify in human engineering, they would be politely but firmly rejected as supervisory timber.

I would then set up a course of training which would tie in definitely with a good book on the subject. A series of conference or discussion meetings would be held in which the entire text of this book would be thoroughly examined. The conference technique of training would be used exclusively with a well developed plan or outline made for and previous to each session.

One book of the dozens which have been published on this subject would be selected, and without discrediting any of them, I would select the one entitled "LET'S BE HUMAN" by John L. Beckley and published by Duell, Sloan & Pearce. This book is in cartoon form and is clever, witty and instructive. In the presentation of the material, I would include the following seven

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rules for handling people successfully: 1. Perfect your self-control; 2. appreciate and praise; 3. stress rewards, avoid punishment; 4. criticize tactfully; 5. always listen; 6. explain thoroughly; 7. consider your men's interests as you would your own.

Each of the above seven rules would be developed more fully than my very sketchy outlines presented here, but the following will give you some idea of the contents of the finishing training package:

1. **Self-Control:** The control of ourselves includes the control of vanity, temper, tongue, likes and dislikes, emotions, and thoughts. All these add up to self-control.

2. **Appreciate and praise:** Everyone yearns for a little genuine appreciation. Every individual is the most important person in the world . . . to himself, just as you and I. It is not sufficient to appreciate . . . we must express it tangibly in praise. This rule could be aptly expressed "recognize . . . appreciate . . . praise . . . conditions, individuals, families, abilities, hopes and dreams."

3. **Stress rewards — avoid punishment:** People work harder for a reward than they do to avoid punishment or the consequences of rule violation. Rewards . . . advantages . . . advancements . . . carry the most weight with the most people.

4. **Criticize tactfully:** Everyone loves to dish it out . . . but few can take it or give it properly. Avoid criticizing if possible to accomplish your ends in any other way. If necessary to criticize . . . try to keep yourself off a pedestal . . . always in private . . . use praise first . . . instill confidence in his future accomplishments. A good rule to follow is "avoid get-

ting satisfaction from the act of criticizing; learn to hate giving it, and you'll do it well."

5. **Always listen:** A good listener rarely says the wrong thing. A good boss is always a good listener because . . . it encourages talking . . . it gets little grievances out in the open. A good listener never interrupts, contradicts or forces advice. A good listener has time to think . . . weigh facts and search for the underlying causes.

6. **Explain thoroughly:** Give your associates all the information you can about the company. Make your men feel like full fledged partners. Give everyone the feeling of importance of being more than just a cog. Give information promptly and thus spike grapevine rumors. If you can't answer questions at once, don't stall, but get the facts and then supply them.

7. **Consider your men's interests as you would your own:** Have the sincere interest of your men at heart. Be progressive for deserved pay increases and promotion of your subordinates. Give credit when due. Quickly remove the physical hazards under which your people may be working. Keep an eye on the health of your group and be concerned about it. Be sure your men know all the benefits possible for them from the company. Make people eager to work for you by working for them.

The above mentioned book, or any comparable publication, would serve as the basis of a good train-

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ing course in "Human Engineering". The principals would probably be the same whether the book was written in 1947 or in 2000 BC. I believe I have given you enough of an insight to the fact that I believe with the speaker that Human Engineering is one of the most important factors in the training and selection of a supervisor for service on the troubled waters of today's industrial picture. I hope that you will notice that the speaker was not the only one to have quoted from a book. I, too, have read a book and if you do nothing more than go out and buy a book on this subject, I believe that each one who does so will have gained something very much worthwhile. Incidentally, each prospective supervisor who is exposed to such a course should receive a copy of the book upon which the course is based, at the end of the course.

MILL BOUGHT BY HALES & HUNTER

The Midland Feed Mill at Marshall, Mo., has been purchased by Hales & Hunter Company, who also have mills in Chicago and Wilmington, Del. The Midland mill has a capacity of 350 tons per 24 hours and has grain storage capacity of 75,000 bushels.

CENTENNIAL ADDS TO MILLS

The Feed and Grain Divisions of the Missoula Mercantile Co., Missoula, Mont., have been acquired by the Centennial Flouring Mills Co., Seattle. Eleven grain elevators and two feed mills changed hands and brings to eight the number of milling properties operated by Centennial.

MANITOBA POOL RENTS ELEVATOR

Manitoba Pool Elevators have leased the Canadian National Railway terminal elevator at the Canadian Lakehead for a period of one year. The acquisition of this elevator with its 7,398,800 bushel capacity doubles the Pool's terminal space at Fort William and Port Arthur.

ARGENTINE ELEVATOR

The largest grain elevator in the Southern Hemisphere is nearing completion at the port of Buenos Aires in Argentina, according to a report in *Milling*, British trade journal. The elevator, which is being built under the Argentine government plan to increase that country's storage space for grain, will have a capacity of 150,000 tons, or about 5,600,000 bus. of wheat.

The concrete housing has already been completed by the Argentine government, and the contract for installation of equipment has been awarded to Henry Simon, Ltd. of England.

The elevator will be capable of receiving 2,000 tons of grain per hour from rail box cars and of loading 3,000 tons per hour bulk into ocean-going ships. Berths and loading facilities have been built for five ships. Facilities will also be constructed for receiving grain from barges and road vehicles.

Included in the equipment to be installed in the elevator are 250 electric motors, with a total of 7,500 h.p., 53 automatic scales, four grain driers and 21 cleaning machines. More than 60 belt conveyors will be used, measuring over 10 miles in length.

This elevator will be the fifth completed under the Argentine government's program of expanding terminal capacity. Other units have been built and are now in operation at Bahia Blanca, Rosario Sud, Quequen and Villa Constitucion. The Bahia Blanca elevator has a capacity amounting to 140,000 tons.

ALLIED MILLS PLANT NEARS COMPLETION

A new building which will double the manufacturing capacity of the Fort Wayne plant of Allied Mills, Inc., is nearing completion. The eight-story concrete grain elevator and feed plant will house eighty-eight 65 foot bins for storage of grain and feed, and have modern facilities for mixing and processing feeds.

WICHITA TERMINAL ADDS

The first two units of 500,000 bushels each which are part of the 2 million bushel addition being built by the Wichita Terminal Elevator, Inc., have been completed and will be ready to receive grain about December 1. The addition of the 2 million bushels will double the Wichita Terminal capacity making it the largest elevator in the Wichita area.

Distribution of Wheat Supply Compared with Average Price Trend 1930-1947

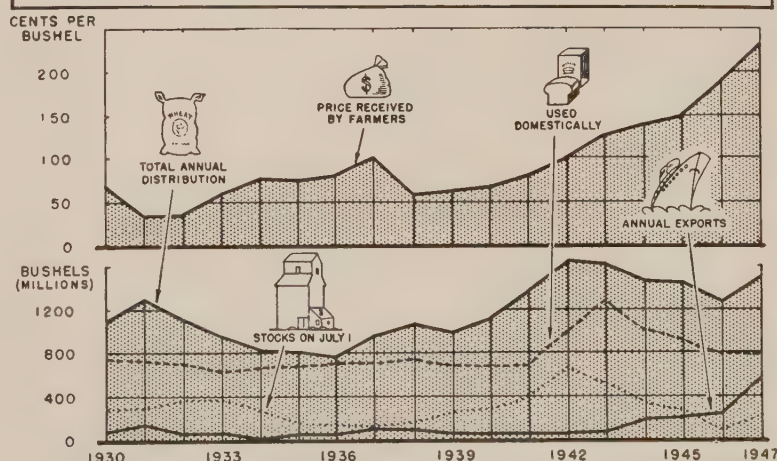


Chart prepared by the Chicago Board of Trade shows varying distribution of wheat from year to year as a result of changes in the relationship between supply and demand. The price graph is based upon the average annual price per bushel received by farmers. Note the coincident rises of price and exports during the last four years. Source of data is the U. S. Department of Agriculture.

NEW CHICAGO ELEVATOR

The Continental Grain Co., through its wholly owned subsidiary, the East St. Louis Grain Elevator Co., has started construction of the first unit of a 3,000,000-bu. elevator at 93rd and Harbor Ave., on the Calumet river in Chicago. The first unit will have 1,250,000 bus. storage, and will be rushed to completion. It is hoped to have the elevator in operation by next July 1 or soon after that date.

The site of the new elevator is across the slip from the Rock Island elevator of 3,000,000 bus., which is also owned and operated by the Continental Grain Co. subsidiary here.

The Continental Grain Co. operates more than 25,000,000 bus. of grain storage in leading terminals and at ports of this country, and is active in domestic and export grain business. Michel Fribourg is president and active head of the company, which maintains its general headquarters in the Produce Exchange Bldg., New York. Julius Mayer, executive vice-president of the Continental Grain Co., is in charge of the Chicago division.

Construction of a 650-foot dock for the elevator is well under way, and driving of pile for the main headhouse and the tanks will start Tuesday.

The headhouse will be equipped

with rapid handling machinery, which will be adequate for the maximum capacity that is being planned. It will have storage space for 100,000 bus., with a marine leg of 25,000 bus. capacity per hour, and two driers of 1,500 bus. per hour each.

The first unit of the elevator will consist of 24 tanks, 100 feet high, 40,000 bus. capacity each, and 17 interstice bins. The elevator will be of reinforced concrete construction and of the most modern type.

STAUFFER ELEVATOR BURNS

The elevator and three warehouses of the P. K. Stauffer Grain Co., Baxter Springs, Kan., were destroyed by fire with an estimated loss of \$100,000, about \$60,000 of which was stored grain.

JENNINGS BUILDS NEW ELEVATOR

The construction of a new country elevator at Leoti, Kansas, was started recently for the C. D. Jennings Grain Co., Wichita. The elevator will have capacity for 250,000 bushels.

FIRE LOSS NEAR MILLION

A fire of unknown origin destroyed the Farmers' Elevator, Jerome, Idaho, with loss as estimated by company officials, of \$1,000,000. The property is owned by Colorado Milling & Elevator Co. of Denver.

west coast, is well on its way to becoming an important factor in that territory. At the present time it is producing feeds only but the company plans to increase operations considerably. Besides some 35 varieties of mixed feeds, other products such as Quaker Oats, Mother's Oats, Aunt Jemima Pancake flours, and others, will be manufactured at this plant. The company leased the former Kerr-Gifford Terminal near Swan Island and has spent \$2,000,000 in expansion and operation costs. Rail and port equipment enables it to export grain with terminal facilities. Bulk grain storage is 700,000 bushels.

GRAIN AND FEED DEALERS NATIONAL CONVENTION

The 52nd convention of the Grain & Feed Dealers National Assn had more than 800 persons registered for the activities and meetings. Officers for the next year are: Henry H. Green, Pattonsburg, Mo., re-elected president; the three vice-presidents elected are Charles G. Robinson, Memphis, 1st vice-president; Ronald C. Booth, Cedar Rapids, 2nd vice-president; and R. F. Cunningham, New York, 3rd vice-president. The board of directors reappointed R. B. Bowden as executive vice-president; Don Clark as secretary; and John C. Bowden as treasurer.



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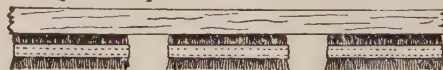
"How did your wife like the parrot I sent her?"

"Not so good. It was pretty tough. She said she'd rather have had a chicken."

BRUSHES RIGHT—FROM THE START— In Quality and Workmanship



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PRICES.



Separator Brushes

We can furnish separator brushes for any machine.

—The STAR Warehouse Push Broom

This is the broom that is used by most large terminal elevators for sweeping grain out of box cars.

Brushes for Every Commercial and Industrial Use

FLOUR CITY BRUSH CO., Minneapolis 15, Minn.

Research to Be Conducted Under Research and Marketing Act on Control of Stored-Grain and Milled-Cereal Insects

R. T. COTTON, Bureau of Entomology and Plant Quarantine, United States Department of Agriculture, Agricultural Research Administration.

The research work being conducted under the Research and Marketing Act on the many species of insects that attack stored grain and its products has as its chief objective the development of practical methods of control by which more complete protection and utilization of these products may be attained. In order to reach this goal a plan of research has been prepared and work initiated at Manhattan, Kansas; Minneapolis, Minnesota; and Tifton, Georgia.

It is well known that insect infestation of stored grain begins on the farm and that much grain is destroyed or rendered unfit for milling or processing before it enters commercial channels. One of the most important problems facing us is the prevention of insect damage to grain in farm storage. We propose to develop and demonstrate a plan whereby grain may be stored on the farm without loss or deterioration from insect attack.

We know that when grain is kept cool, dry and clean it is not injured by insects and can be stored for long periods without deterioration. In warm climates it is not possible to keep grain cool enough at all times to prevent insect activity. However, by good storage practices serious insect injury can be prevented.

Wheat: In the hard winter wheat region of the Southwest and the soft winter wheat region of the East and Middle West; prompt harvest after the wheat is dry enough for safe storage; storage in insect-free, weather-tight bins; and fumigation in August should insure the preservation of wheat in a condition free from insect damage. We propose to demonstrate the efficacy of this treatment by selecting a series of farm bins in each of a number of States in this region, fumigating them in August and making monthly observations on the insect population in the wheat stored therein. The work will be done in cooperation with State agencies. In the course of the work the efficiency of a number of different fumigants for different types of bins will be tested. In addition, the efficacy of various surface treatments will be studied to determine their value in preventing surface infestation.

The difficulty of detecting the presence of insect infestation hidden within the wheat kernel has allowed the sale of wheat stocks that are sufficiently contaminated with insects to make it difficult for the miller to manufacture flour that is free from insect fragments. The fact that the farmer is not penalized if he sells infested wheat, and that inferior grades of wheat can be disposed of by mixing with superior grades, removes some of the incentive to conserve wheat from insect infestation.

One of our projects under the Research and Marketing Act is to develop a simple method of detecting the presence of this hidden infestation in wheat. The presence of living insects within grain can be detected by the amount of carbon dioxide produced in a sample of grain over 24-hour period. This method is too slow for our purpose and does not reveal the presence of dead insects within the kernels. Differences in the specific gravity of infested and non-infested kernels can be used to separate heavily infested or badly damaged kernels from non-infested kernels, but this method is not sufficiently accurate. Mr. J. C. Frankenfeld of our Manhattan office has recently found that by the use of either of two dye stains, weevil egg punctures and feeding punctures can be detected in a few minutes. The percent of infested kernels in a sample of wheat can be readily and quickly determined by a simple and inexpensive method. Work is under way to correlate percent in-

festation in wheat with insect fragment count in flour made from such wheat stocks.

Corn: In the South where corn is infested in the field and quickly becomes unfit for milling if held in storage on the farm, we have established a research project to determine what can be done to alleviate or remedy the situation. We plan to study the possibility of breeding weevil-resistant varieties, the prevention of field infestation by the use of protective dusts or other insecticides, and the development of a safe storage program.

Insect Infestation in Flour Mills: There are many theories as to the best methods for preventing or controlling insect infestation in flour mills. Some of you are firm believers in a general fumigation once, twice or three times a year. Others feel that a general fumigation is unnecessary if local fumigants are regularly applied manually to each milling unit; to the rolls just before the mill is shut down; to the elevator boots without shutting down the mill; or automatically, in a vaporized condition through a piping system. Some think all of the machinery must be treated at one time and others think it may be treated by sections or blocks. The use of sprays in and around machinery, the dusting of elevator boots with lime or with inert dusts, the cleaning and the use of the Entoleter have their advocates.

The effectiveness of any one or a combination of these methods of preventing insect losses can be determined by correlating the insect population of the mill with the method used. We propose to select a number of mills in different sections of the country that employ different insect control programs and study the relative effectiveness of these programs by determining the insect populations of these mills at all times of the year. Monthly collections will be made from the various milling streams of these mills and a record kept of the insects present and their relative abundance. From these studies a fund of information will be built up relative to the effectiveness of any one control method or combination of methods. At the same time we shall obtain a record of the insects that are troublesome in various parts of the country.

Another project that is already under way deals with the development of insect-resistant packages. Promising results have already been obtained with the treatment of cotton bags. This type of bag is more easily penetrated by insects than paper bags since the flour beetle can lay its eggs directly in the flour through the meshes of the cloth. By impregnating the fabric with a non-poisonous chemical, flour-infesting insects have been repelled for considerable periods and flour packed in treated cotton bags has remained uninfested.

Until insect-proof bags are universally used flour shipments will be subject to infestation from insect-contaminated railway box cars. It is hoped that efficient methods of treating boxcars can be developed that will prevent infestation in transit.

There are many problems in the control of the insect pests of stored grain and milled cereal products. We would like to work on the ones giving the greatest trouble. The operative miller is the man who is up against the problem of manufacturing and marketing a clean and wholesome product in spite of the attack of insects. We would like to know what he considers his greatest problems so that we can improve and perfect our research program.

(A.O.M. Bulletin)

**DON'T PAY THE HEAVY
TOLL CAUSED BY FIRE —
BE VIGILANT**

Grain elevator superintendents have been reading articles warning of fire hazards for years and years. Perhaps many of them have brought home the facts pointed out — that it is well and safe to remember that proper precaution and prevention of fire hazards will eliminate fire itself. The grain elevator presents a natural fire hazard and experts have pointed out that more elevator fires start in the elevator legs than at any other single location. Periodic checking of the legs may prevent a costly fire and think what regular inspections will do for your peace of mind.

Careful supervision by the superintendent can cut down losses substantially and may eliminate such losses entirely. Fire is no respecter of either time or location and its penalty is an enormous cost in time, money and property, so be on guard against it at all times and at all places.

Plans should be made to enforce

a regular schedule of lubrication and inspection and everything should be done to make heads and boots easily accessible so that your men do not find it difficult or dangerous to reach heads, boots or bearings. It is important too, that your plant is equipped with the proper type of fire extinguishers or alarm systems. Be vigilant at all times. You can't afford to relax your fire prevention precautions, or —to be unprepared for an emergency when it arises.

GRAIN PLANT FIRES IN 1947

The National Fire Protection Assn Quarterly listing the estimated distribution of U. S. fire losses by occupancies shows 2000 fires with losses of \$300,500,000 in flour mills and elevators.

The Mill Mutual Fire Prevention Bureau reports that the grain handling and processing industry lost \$100,170,000 in property last year through damage caused by 30 major fires destroying more than \$100,000 each. This is a reduction from the 1946 figure of 36 major fires.

In 1941 there were but four major mill and elevator fires.

WARNING

A 30-year-old metal worker died enroute to a hospital recently after plunging 90 feet down the shaft of a manlift in a flour mill elevator. He was a veteran of European combat during World War II. A steel catwalk from the rim of the old elevator to the new elevator was being constructed and the man apparently slipped when he stepped from the small step of the manlift to the elevator rim. His body landed on the concrete floor of the elevator and death was attributed to a compound skull fracture.

The above case is an example of taking short cut methods and of failing to wear a safety belt. Maintenance men are often guilty of supporting their weight on manlifts, etc. Floor openings are always "traps."

The worst thing about history is that every time it repeats itself the price goes up.

Douglas



**YOUR FUMIGATION
PROBLEMS**



What is your grain fumigant problem? As far back as 1916, grain handlers and elevator operators were bringing their individual fumigant problems to Douglas Chemical & Supply Company. Through the years, Douglas technicians have given personal attention to thousands of separate and different cases. Frequently, in finding the correct solution, new or improved methods are discovered. You benefit from this source of improvement when you order Douglas fumigants and insecticide sprays.

Write today for complete information.

"PIONEERS OF SAFE INSECTICIDES"

Douglas Chemical and Supply Company

1324-26 West 12th St.

INCORPORATED 1916

Kansas City, Missouri

BRANCH WAREHOUSES: INDIANAPOLIS, INDIANA; SPOKANE, WASHINGTON;
MINNEAPOLIS, MINNESOTA; PORTLAND, OREGON.

"LIFE BEGINS AT 70"

The Erie Dispatch Herald recently featured a story of the Eriez Manufacturing Co., Erie, Pa., in which the theme was basically built around O. F. Merwin, the company's president. The "Life Begins At 70" title was based on the fact that it was at that age that Mr. Merwin really went into action. It was especially interesting because at the time most people are considering retirement, Mr. Merwin built the company that today stands alone as the largest exclusive producer of non-electric magnetic separating equipment.

FLYING SERVICE

Seedburo service satisfies — takes on a new meaning with the appointment of Sam Savage, Gould-Savage Seed Co., Chester, S. Car., as agent for the Seedburo Equipment Co., Chicago. Savage will handle the complete Seedburo lines in Georgia, North Carolina and South Carolina, covering this large territory by plane which he pilots.

NATIONAL OATS INSTALLS AUTOMATIC FIRE GUARD

The National Oats Co., East St. Louis, Ill., has installed an automatic fire extinguishing system in their modern grain elevator and storage building. The system utilizes carbon dioxide as the extinguishing agent and was designed and installed by Walter Kidde & Co., Bellville, N. J. The elevator requires only three men for capacity operation of 8000 bushels per hour, however 24-hour protection is afforded by the extinguishing system from fires against which no personnel would be effective.

MAGNETIC PULLEYS

A complete description of features and applications of Electromagnetic Pulleys and Alnico Magnetic Perma-Pulleys for automatic separation of ferrous and non-ferrous materials is given in two new 8-page catalogs recently issued by Dings Magnetic Separator Co., 4740 W. McGeogh Ave., Milwaukee 14, Wis. Both catalogs were prepared

as a ready guide for magnetic separator users to help determine the size and type of magnetic pulley most suitable for their specific requirements.

W. B. BOSWORTH DIES

William B. Bosworth, secretary of the Chicago Board of Trade, died November 1 after several months' illness. Mr. Bosworth became assistant secretary in 1929 and assumed the secretary post two years ago. He was 58.

STALEY HOSPITAL

The A. E. Staley Co., Decatur, Ill., announces the completion of their new \$100,000 hospital and first aid building in which special treatment for shock, hemorrhage and burns can be administered. All equipment is of the latest medical design.

Sprinkle salt on icy sidewalks or mix salt with sand or cinders to prevent winter falls, the National Safety Council suggests.

STOP WATER SEEPAGE! and grain spoilage with... *Weatherproofing!*

Costly grain spoilage may be caused by water seeping through concrete which has been deteriorated by the natural forces of nature. Spalling, flaking, cracking and disintegrating concrete—the source of such trouble—can be effectively corrected and prevented by properly engineered remedial restoration and weatherproofing. Western's expert maintenance services assure an attractive, durable, weather-resistant and waterproof structure, and many added years of usefulness for your elevator.

WESTERN WEATHERPROOFING SERVICES INCLUDE:

- ★ WATERPROOFING
- ★ CONCRETE RESTORATION
- ★ MORTAR JOINT REPLACEMENT
- ★ PRESSURE APPLICATION OF CEMENT
- ★ PUTTING JOINTS IN MOVEMENT

No materials for sale. All work done under contract, insured and guaranteed.
Let us be your concrete dentist.

For over 35 years, Western has specialized in the restoration and weatherproofing of mass concrete structures. Western's service combines technical analysis by experienced engineers plus the use of proven materials and their application by skilled technicians. The full responsibility for a weatherproof elevator can be placed on the Western organization.

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SYNDICATE TRUST BLDG. • ST. LOUIS 1, MO.

KANSAS CITY, MO. • SPRINGFIELD, ILL. • ATLANTA, GA. • CHARLOTTE, N. C.



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Every Day The Elements Are Gnawing Away at Your Properties, Eating Up and Tearing Down Your "House Of Cards." Why Not Protect Yourself As Best You Can By Consulting With . . .

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